

U.S. Application No.: 10/689,221  
AMENDMENT B

Attorney Docket: 3975.025

RECEIVED  
CENTRAL FAX CENTER

DEC 07 2006

**IN THE CLAIMS:**

This listing of the claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) A powder mixture for resorbable calcium phosphate biocements, characterized by a fraction mixture consisting of (relative to the total volume of the powder mixture):

40-99% by volume of powder having a particle size of 0.1-10 $\mu$ m

1-20% by volume of powder having a particle size of 10-43 $\mu$ m

0-59% by volume of powder having a particle size of 43-315 $\mu$ m

which powder is obtained by grinding the spontaneously crystallizing melts of a material comprising crystalline and X-ray amorphous phases, which material

a) according to  $^{31}\text{P}$ -NMR measurements, contains  $\text{Q}_0$ -groups of orthophosphate and  $\text{Q}_1$ -groups of diphosphate, the orthophosphates or  $\text{Q}_0$ -groups making up 65 to 99.9% by weight relative to the total phosphorus content of the powder mixture and the diphosphates or  $\text{Q}_1$ -groups making up 0.1 to 35% by weight relative to the total phosphorus content of the powder mixture, and

b) according to X-ray diffractometric measurements and relative to the total weight of the powder mixture, contains 35 to 99.9% by weight of a main crystal phase selected from the group consisting of  $\text{Ca}_2\text{K}_{1-x}\text{Na}_{1+x}(\text{PO}_4)_2$ , where  $x = 0.1$  to  $0.9$ ,  $\text{Ca}_{10}\text{Na}(\text{PO}_4)_7$ ,  $\text{Ca}_{10}\text{K}(\text{PO}_4)_7$ , mixtures thereof and mixed crystals according to the general formula  $\text{Ca}_{10}\text{K}_x\text{Na}_{1-x}(\text{PO}_4)_7$ , where  $x = 0$  to  $1$ , and 0.1 to 20% by weight of a substance selected from the group consisting of  $\text{Na}_2\text{CaP}_2\text{O}_7$ ,  $\text{K}_2\text{CaP}_2\text{O}_7$ ,  $\text{Ca}_2\text{P}_2\text{O}_7$ ,  $\text{NaPO}_3$ ,  $\text{KPO}_3$  and mixtures thereof as a secondary crystal phase, and

c) besides the main crystal phase, contains an X-ray amorphous phase which in total makes up 0.1 to 65% by weight relative to the total weight of the powder mixture

and which material is prepared by combining the substances 30-55% by weight  $\text{CaO}$ , 35-50% by weight  $\text{P}_2\text{O}_5$ , 1-20% by weight  $\text{Na}_2\text{O}$ , 0.5-20% by weight  $\text{K}_2\text{O}$  and 0.1-5% by weight (WP353915.1)

U.S. Application No.: 10/689,221  
AMENDMENT B

Attorney Docket: 3975.025

MgO and optionally up to 5% by weight SiO<sub>2</sub>, homogenizing and drying the mixture and subjecting it to a step-by-step thermal treatment lasting 1-2h at 350-450°C, 750-850°C and 950-1,050°C respectively, melting the mixture at between 1,550 and 1,650°C, holding it at the melting temperature for between 10 and 60 minutes and finally cooling the mixture in a spontaneous or temperature-controlled manner and grinding it.

2. (currently amended) A powder mixture according to Claim 1, wherein said mixture contains 0.1-15% by weight, preferably 0.5-4% by weight chain phosphates selected from ~~the group consisting of~~ among NaPO<sub>3</sub>, KPO<sub>3</sub>, mixed crystals thereof and mixtures of the foregoing, which are indicated by Q<sub>2</sub>-groups in <sup>31</sup>P-NMR measurements.

3. (previously presented) A powder mixture according to Claim 1, wherein the orthophosphates make up 40 to 95% by weight.

4. (previously presented) A powder mixture according to Claim 3, wherein the orthophosphates make up 50 to 90% by weight.

5. (previously presented) A powder mixture according to Claim 1, wherein the di-phosphates make up 1 to 22% by weight, preferably 5 to 22% by weight.

6. (previously presented) A powder mixture according to Claim 5, wherein the di-phosphates make up 5 to 22% by weight.

7. (previously presented) A powder mixture according to Claim 1, wherein in the melted or ground state said mixture consists of (in % by weight):

30 to 55 P<sub>2</sub>O<sub>5</sub>

25 to 50 CaO

{WP353915.1}

- 3 -

U.S. Application No.: 10/689,221  
AMENDMENT B

Attorney Docket: 3975.025

1	to	20	Na <sub>2</sub> O
0.5	to	20	K <sub>2</sub> O
0.1	to	13	MgO
0.0	to	10	SiO <sub>2</sub>

MgO or SiO<sub>2</sub> or a mixture thereof making up at least 1% by weight, and the corresponding crystal phases.

8. (previously presented) A powder mixture according to Claim 1, wherein said mixture contains up to 10% of a silicate phase.

9. (previously presented) A powder mixture according to Claim 1, wherein said mixture additionally contains up to 30% by weight alpha-tricalcium phosphate, beta-tricalcium phosphate or mixtures thereof besides the powder obtained by a melting process.

10. (previously presented) A powder mixture according to Claim 1, wherein said mixture additionally contains an active agent selected from the group consisting of antibiotics, other pharmaceutical active agents, disinfectants, bacteriostats and mixtures thereof.

11. (previously presented) A powder mixture according to Claim 1, wherein said mixture is provided in the form of an aqueous solution, a suspension or a paste.

12. (previously presented) A powder mixture according to Claim 1, wherein in mixed crystals the element Ca is replaced by Mg in an amount ranging up to 20% by weight relative to the weight of the powder mixture.

{WP353915.1}

- 4 -

U.S. Application No.: 10/689,221  
AMENDMENT B

Attorney Docket: 3975.025

13. (previously presented) A powder mixture according to Claim 1, wherein said mixture is provided in a two-component kit wherein one component is said powder and the other component is made up of a water phase.

Claims 14 -21. (Withdrawn)

{WP353915.1}

- 5 -